

Appl. No. 10/064,601
Amdt. dated February 10, 2006
Reply to Office action of November 10, 2005

Amendments to the Claims:

Listing of Claims:

- Claim 1 (withdrawn): A control circuit for controlling an optical disk drive, the control
5 circuit comprising:
a frequency detector for receiving an eight-to-fourteen modulation (EFM) signal
and a data phase-locked loop (DPLL) signal;
a phase detector for receiving the EFM signal and the DPLL signal;
a low pass filter connected to the frequency detector and the phase detector for
10 receiving outputs from the frequency detector and the phase detector and for
outputting a first control signal;
a controller for monitoring the DPLL signal, calculating a target frequency, and for
outputting a second control signal generated according to the target frequency to
the VCO; and
15 a voltage-controlled oscillator (VCO) connected to the low pass filter and the
controller for receiving the first control signal and the second control signal, and for
generating the DPLL signal based on the first control signal when the optical disk
drive is in a non-seek mode, and for generating the DPLL signal based on the
second control signal when the optical disk drive is in a seek mode.
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- Claim 2 (withdrawn): The control circuit of claim 1 wherein during the seek mode, the
controller calculates the target frequency and outputs the second control signal to
the VCO to cause the VCO to output the DPLL signal according to the target
frequency.
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- Claim 3 (withdrawn): The control circuit of claim 1 wherein the controller calculates
the target frequency and outputs the second control signal to the VCO to cause the
VCO to output the DPLL signal according to the target frequency when a rotation

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speed of a spindle of the optical disk drive changes.

Claim 4 (withdrawn): The control circuit of claim 1 wherein the controller comprises:
a digital-to-analog converter connected to the VCO for outputting the second
5 control signal; and
a frequency monitor for monitoring the DPLL signal.

Claim 5 (withdrawn): The control circuit of claim 1 further comprising a frequency
divider connected to the VCO for dividing a frequency of the DPLL signal.

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Claim 6 (withdrawn): The control circuit of claim 1 wherein the controller further sets
charge pump currents of the frequency detector and the phase detector according to
the target frequency.

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Claim 7 (withdrawn): The control circuit of claim 1 wherein the controller determines
the target frequency referencing a track number and a media type.

Claim 8 (withdrawn): The control circuit of claim 1 wherein the controller further sets
an RF equalizer signal and a differential phase detector (DPD) equalizer signal
20 according to the target frequency.

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Claim 9 (withdrawn): The control circuit of claim 8 wherein the controller references
tabulated data to correspond the target frequency with the second control signal, the
RF equalizer signal, and the DPD equalizer signal.

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Claim 10 (withdrawn): The control circuit of claim 1 wherein the optical disk drive
operates in a constant angular velocity mode.

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Claim 11 (withdrawn): The control circuit of claim 1 being incorporated in a compact disk (CD) drive or a digital versatile disk (DVD) drive.

5 Claim 12 (currently amended): A method for controlling an optical disk drive, the method comprising:
monitoring a data phase-locked loop (DPLL) signal;
generating a first control signal based on an eight-to-fourteen modulation (EFM) signal and the DPLL signal;
generating the DPLL signal based on the first control signal when the optical disk
10 drive is in a non-seek mode;
calculating predicting a target frequency of the DPLL signal for a target track when the optical disk drive is in a seek mode for track seeking;
generating a second control signal based on the target frequency; and
generating the DPLL signal based on the second control signal.

15 Claim 13 (original): The method of claim 12 further comprising:
detecting when a rotation speed of a spindle of the optical disk drive changes; and
generating the DPLL signal based on the second control signal when the rotation speed of the spindle of the optical disk drive changes.

20 Claim 14 (original): The method of claim 12 further comprising frequency dividing a frequency of the DPLL signal.

25 Claim 15 (original): The method of claim 12 further comprising setting charge pump currents of a frequency detector and a phase detector according to the target frequency.

Claim 16 (currently amended): The method of claim 12 wherein calculating predicting the

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target frequency references a track number and a media type of the optical disk drive.

5 Claim 17 (currently amended): The method of claim 12 further comprising referencing a lookup table stored in the controller according to the predicted target frequency for setting an RF equalizer signal and a differential phase detector (DPD) equalizer signal;

10 Claim 18 (cancelled)

Claim 19 (currently amended): A method for controlling an optical disk drive, the method comprising:
monitoring a data phase-locked loop (DPLL) signal;
generating a first control signal based on an eight-to-fourteen modulation (EFM)
15 signal and the DPLL signal;
generating the DPLL signal based on the first control signal when the optical disk drive is in a non-seek mode;
detecting when a rotation speed of a spindle of the optical disk drive changes;
~~calculating~~ predicting a target frequency of the DPLL signal for a target track when
20 the rotation speed of the spindle changes;
generating a second control signal based on the target frequency; and
generating the DPLL signal based on the second control signal.

Claim 20 (new): A method for controlling an optical disk drive, the method comprising:
25 monitoring a data phase-locked loop (DPLL) signal;
generating a first control signal based on an eight-to-fourteen modulation (EFM) signal and the DPLL signal;

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generating the DPLL signal based on the first control signal when the optical disk
drive is in a non-seek mode;
referencing track number information to calculate a target frequency of the DPLL
signal for a target track when the optical disk drive is in a seek mode for track
5 seeking;
generating a second control signal based on the target frequency; and
generating the DPLL signal based on the second control signal.

Claim 21 (new): A method for controlling an optical disk drive, the method comprising:
10 monitoring a data phase-locked loop (DPLL) signal;
generating a first control signal based on an eight-to-fourteen modulation (EFM)
signal and the DPLL signal;
generating the DPLL signal based on the first control signal when the optical disk
drive is in a non-seek mode;
15 detecting when a rotation speed of a spindle of the optical disk drive changes;
referencing track number information to calculate a target frequency of the DPLL
signal for a target track when the rotation speed of the spindle changes;
generating a second control signal based on the target frequency; and
generating the DPLL signal based on the second control signal.

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